

Three Shale-slope Plants in Maryland

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At a number of places in the Appalachians, between northeastern Tennessee and central Pennsylvania, argillaceous rocks of Devonian age (or rarely of other geologic ages) outcrop on the flanks of ridges, and weather into slabs and chips, which slowly slide down hill, so that little or no soil can accumulate (see figures). Only plants which are adapted to withstand exceptionally dry,



Trifolium virginicum Small, on a typical shale-slope at Gilpin, Allegany County, Maryland, May 30, 1928. Edgar T. Wherry, photo.

sterile, and unstable conditions are able to colonize such "shale-slopes," and many of the species represent various types of endemism. Some of these shale-slope endemics were discovered around 1800, and others about a century later, the typical occurrence on Kates Mountain, near White Sulphur Springs, West Virginia, having been particularly fruitful at the latter period. As, however,

very few of the hundreds of existing shale-slopes have ever been investigated by botanists, additional species no doubt remain to be recognized, and details of the distribution of already known species remain to be worked out. One addition to the list of recognized species, and several extensions of range are here placed on record.

The Longleaf Clover, *Trifolium virginicum* Small,¹ was discovered on Kates Mountain in 1892, and for 30 years no other occurrence of it was known. In 1923 Hunnewell² found it at Hot Springs, Virginia, but these two are the only localities definitely mentioned in the literature. In the course of field work with his classes during the past five years, Professor P. D. Strausbaugh,³ of West Virginia University, has discovered this plant at two new localities in that state, near Burlington, Mineral County, and Sweet Springs, Monroe County. Its range has now been further extended by the finding of it in May, 1928, by participants in a Wild Flower Preservation Society field trip, at Gilpin and Pratt, Allegany County, Maryland. Instead of being exceedingly rare, as would be inferred from its representation in herbaria and published records, this plant evidently occurs more or less throughout the shale-slope region, although limited to the most barren situations. As no habitat photograph of the Longleaf Clover appears ever to have been published, one is reproduced herewith.^{3a}

One of the most characteristic plants of the Appalachian shale-slopes is an erect *Convolvulus* which is not accorded a place in current botanical manuals. While related to *C. spithameus* L., it differs from that species in several respects. Typical *C. spithameus* has a lax habit, with the internodes much exceeding the petioles; the pubescence rather sparse (or exceptionally fairly dense); the leaf-blades elliptic or somewhat obovate, little if at all auricled, and conduplicate only when young; the petioles about $\frac{1}{4}$ as long as the blades; and the bracts elliptic, more than twice as long as broad, narrowed toward the base, and but slightly keeled.

¹ Mem. Torr. Bot. Club, 4: 112. 1893.

² Rhodora, 25: 168. 1923.

³ Private communication.

^{3a} While this paper was in course of publication, the clover has been found in two new Virginia localities, just west of Gore, Frederick Co., and $1\frac{1}{2}$ miles west of Covington, Alleghany Co. This makes 8 stations now definitely known.

The shale-slope plant has a compact habit, with the internodes about equalling the petioles; the pubescence dense and velvety; the leaf-blades lanceolate to oblong, conspicuously auriculate with but slightly divergent lobes 5-10 mm. long, and persistently conduplicate; the petioles 10-15 mm. long, about 1-3 the length of the blades; and the bracts ovate, often nearly as broad as long, more or less cordate, and rather strongly keeled.



Convolvulus stans Michaux, on calcareous shale just north of Flintstone, Allegany County, Maryland, May 30, 1928. Edgar T. Wherry, photo.

Unlike the Longleaf Clover, this *Convolvulus* is not limited to Appalachian shale-slopes, but occurs occasionally on gravel derived from other types of rock, and extends a considerable distance northward, even entering southern Canada. It was apparently first recognized in the latter region by Michaux,⁴ and named *Convolvulus stans*. Pursh⁵ renamed it *Calystegia pubescens*, and

⁴ Fl. Bor. Amer. 1: 136. 1803.

⁵ Fl. Amer. Sept. 1: 143. 1814.

recorded its presence in the Appalachians of Virginia; there is a specimen collected by him near Sweet Springs (which lies on the boundary between Virginia and West Virginia) preserved in the herbarium of the Academy of Natural Sciences of Philadelphia. A similar, if not identical, plant was separated by Greene⁶ as *Convolvulus camporum*, but its status remains to be ascertained, and the name of Michaux, having clear priority, is the one that should be used. As to how common *Convolvulus stans* may be toward the northern end of its range I have no data, but it is abundant on practically every shale-slope which I have seen, in one or more places in Alleghany, Bath and Highland counties, Virginia, and Greenbrier, Hardy, and Monroe counties, West Virginia. On the Wild Flower Preservation Society trip of May, 1928, above referred to, it was found in bloom on a ridge of calcareous shale just north of Flintstone, Alleghany County, Maryland, and the photograph reproduced above was obtained. Typical *C. spithameus* occurs in the same or neighboring counties, in places where normal soils have developed on rock ledges, but the two can be readily distinguished at a distance or from a moving automobile, and are certainly worthy of separate recognition in botanical manuals. A good common name would be Velvet Convolvulus.

Another plant which is highly characteristic of Appalachian shale-slopes, though also growing to some extent on other kinds of rock, is the Everlasting Groundsel, *Senecio antennariifolius* Britton. This is on record from Virginia and West Virginia, but apparently not from Maryland, so the finding of it in the latter state is worth noting. In May, 1928, the Wild Flower Preservation Society members found it east of Hancock, in Washington County, and near Cumberland and Gilpin, in Alleghany County, the correctness of our identification being kindly confirmed by Dr. S. F. Blake.

Although the Hairy Penstemon, *Penstemon canescens* Britton, is not a typical shale-slope plant, it sometimes grows in such habitats, and its discovery in May, 1928, east of Hancock, Maryland, may be placed on record here. In this case identification was confirmed by Dr. Francis W. Pennell.

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⁶ Pittonia, 3: 328. 1898.